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**THE CLAIMS:**

1. A process for preparing an aqueous dispersion of water insoluble polymer particles comprising:
  - 5 a) preparing by polymerisation an aqueous dispersion of water insoluble particles of a heteropolymer including monomeric units of a reactive amphiphile having a cloud point and monomeric units of a hydrophilic monomer, said polymerisation being conducted in the presence of a stabilising agent and the reactive amphiphile and at a temperature above the cloud point of said  
10 amphiphile,
  - b) cooling said aqueous dispersion to a temperature below the cloud point of the reactive amphiphile such that the viscosity of the aqueous dispersion increases.
- 15 2. A process according to claim 1 wherein the reactive amphiphile is incorporated into the backbone of said heteropolymer.
3. A process according to claim 2 wherein the reactive amphiphile includes one or more double or triple bonds.
- 20 4. A process according to claim 3 wherein the reactive amphiphile is selected from unsaturated fatty acid alkoxylates, unsaturated fatty alcohol alkoxylates and surfactants containing reactive double bonds derived from (meth)acryl or vinyl groups.
- 25 5. A process according to claim 2 wherein the amphiphile includes a group selected from carboxylate, sulfonate, phosphate and primary and secondary amine groups.
- 30 6. A process according to claim 1 wherein the heteropolymer includes in its backbone a monomer comprising a terminal or pendant functional group which reacts with a

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reactive group present on the reactive amphiphile such that the reactive amphiphile is incorporated into the heteropolymer.

- 5 7. A process according to claim 6 wherein the reactive amphiphile includes a reactive group selected from carboxylate, sulfonate, phosphate and primary and secondary amine groups.
8. A process according to claim 1 wherein the reactive amphiphile has a cloud point of greater than 10°C above the use temperature of a water based composition or  
10 paint into which it is incorporated.
9. A process according to claim 8 wherein the reactive amphiphile has a cloud point of greater than 45°C.
- 15 10. A process according to claim 8 wherein the reactive amphiphile has a cloud point of between 50°C and 100°C.
11. A process according to claim 1 wherein the amount of reactive amphiphile used to prepare the water insoluble particles of heteropolymer is from 1 to 35% by weight  
20 of the heteropolymer.
12. A process according to claim 1 wherein the hydrophilic monomer comprises 5 to 99% by weight of the heteropolymer.
- 25 13. A process according to claim 1 wherein at least a portion of the monomeric units of hydrophilic monomer have ionizable groups.
14. A process according to claim 13 wherein the ionizable groups are acid groups.
- 30 15. A process according to claim 14 wherein the hydrophilic monomer having ionizable acid groups is selected from methacrylic acid, acrylic acid, itaconic acid,

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p-styrene carboxylic acids, p-styrene sulfonic acids, vinyl sulfonic acid, vinyl phosphonic acid, ethacrylic acid, alpha-chloroacrylic acid, crotonic acid, fumaric acid, citraconic acid, mesaconic acid and maleic acid.

- 5 16. A process according to claim 13 wherein the hydrophilic monomers having ionizable groups make up 0.1 to 40% by weight of the heteropolymer.
17. A process according to claim 1 wherein the heteropolymer contains monomeric units of a hydrophobic monomer having a water solubility of less than 5g/L.
- 10 18. A process according to claim 17 wherein the hydrophobic monomer is selected from styrene, alpha-methyl styrene, butyl acrylate, butyl methacrylate, amyl methacrylate, hexyl methacrylate, lauryl methacrylate, stearyl methacrylate, ethyl hexyl methacrylate, crotyl methacrylate, cinnamyl methacrylate, oleyl methacrylate, ricinoleyl methacrylate, vinyl butyrate, vinyl tert-butyrate, vinyl stearate and vinyl laurate.
- 15 19. A process according to claim 13 wherein the polymerisation is carried out using a sequential polymerisation process in which the reactive amphiphile and ionizable monomers are concentrated in a first feed which is polymerised prior to addition and polymerisation of a second feed in which the ionizable monomer and/or reactive amphiphile are absent or in lower concentrations relative to the first feed.
- 20 20. A process according to claim 19 wherein seed particles are prepared prior to polymerisation of said first feed.
- 25 21. A process according to claim 1 wherein the stabilising agent is selected from anionic surfactants, polymeric stabilisers, cationic surfactants and non-ionic surfactants which cloud points above the temperature of polymerisation.

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22. A process according to claim 1 wherein the polymerisation temperature is greater than 5°C above the cloud point of the reactive amphiphile.
23. A process according to claim 22 wherein the polymerisation temperature is below  
5 120°C.
24. A process according to claim 13 wherein the viscosity of the aqueous dispersion is further increased after polymerisation by neutralisation of at least a portion of the ionizable groups.  
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25. An aqueous dispersion of water insoluble heteropolymer particles wherein said heteropolymer particles comprise an inner polymeric core and an outer polymeric sheath, wherein said core incorporates units of a reactive amphiphile having a cloud point, said units of reactive amphiphile being substantially hydrated, and wherein at  
15 least a portion of said sheath comprises polymerised hydrophilic monomers, said dispersion exhibiting temperature dependent viscosity.
26. An aqueous dispersion of water insoluble heteropolymer particles, wherein said heteropolymer particles incorporate units of hydrophilic ionizable monomers and  
20 reactive amphiphile throughout the particles.
27. An aqueous dispersion of water insoluble particles prepared in accordance with the process of claim 1.
- SUB 25*  
*Ad*  
28. Paints, binders or thickeners for paints, adhesives, textile coatings, carpet backings or construction materials comprising an aqueous dispersion of polymeric particles according to any one of claims 25 to 27.
29. Use of an aqueous dispersion of polymeric particles according to any one of claims  
30 25 to 27 as a sole combined thickener/ binder for a paint.